Temple University
Background, experience and preparation for sPHENIX TPC

Matt Posik & Bernd Surrow

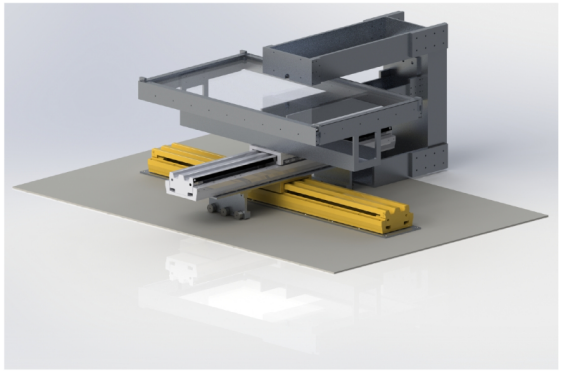
TEMPLE UNIVERSITY

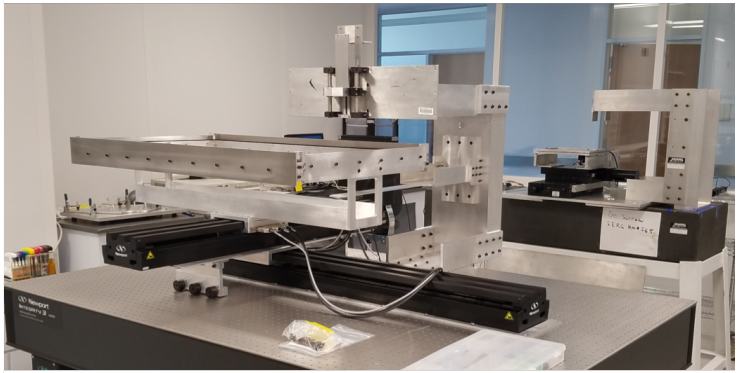
TU - High-Energy Nuclear Physics group

- Group members:
  - 2 Faculty members: M. Posik (Research Assistant Professor), B. Surrow (Professor of Physics, PI)
  - 1 Postdoc: A. Quintero
  - 4 Graduate students: D. Gunarathne, A. Kraishan, J. Nam, D. Olvitt
  - 4 Undergraduate students supported by TU CST Undergraduate Research Program
- Funding:
  - DOE NP grant
  - EIC R&D detector sub-contract
- Current research program by High-Energy Nuclear Physics group:
  - STAR high-energy polarized p+p program: W/Z production and Jet production, in particular di-jet production
  - Detector R&D: Micro-pattern gas detector, in particular GEM detector R&D
  - EIC: Kinematic reconstruction methods / Interest in low-x physics both in eA and ep collider mode / Imaging
- Infrastructure for High-Energy Nuclear Physics group:
  - Micro-pattern clean room facility: 2000 sq. ft. permanent clean room facility (Class 1,000) supported by CST with complete GEM assembly and testing tooling incl. large CCD scanner of GEM foils / Leakage current setup / Large storage units
  - Detector R&D lab: DAQ system, Cosmic-ray test stand, Optical table, Gas system. X-ray scanner, Large ultra-sonic bath
  - Engineering support: Mechanical engineer for nuclear physics research supported by CST
  - Workshop: Full mechanical machine shop and electrical shop with three technicians

TU - sPHENIX TPC interestes

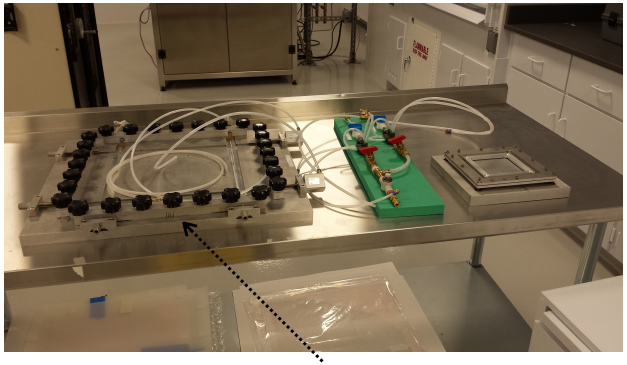
- Interest in TPC tasks
  - Design of GEM foils: Segmentation, HV routing, HV pads - Performed multiple times for other projects
  - GEM foil orders / Contact to CERN / QA and test profiting from extensive experience in handling GEM foils
  - Strong interest to act as a production center for GEM foil testing and module assembly
  - Relatively short distance from TU to SB / BNL will ease logistic aspects
- Pictures: Micro-pattern clean room facility - Permanent Class 1,000 clean room





CCD scanning setup of GEM foils on 4' X 6' optical table / Assembly and storage of GEM detectors and components

Electrical test station



Stretching jig

TU - sPHENIX TPC interestes

- Pictures: Detector R&D lab - Flexible Class 1,000 clean room section / Cosmic-ray & X-ray testing